WHAT IS CLAIMED IS:

1. A flyback converter for performing a zero voltage switch in a boundary mode, comprising:

a transformer including a primary winding and a secondary winding;

a series circuit including at least one auxiliary capacitor and a switch at the primary side in series connected with the auxiliary capacitor, the series circuit being in parallel connected with the primary winding;

a switch at the secondary side being in series connected with the secondary winding;

a main switch being in series connected with one terminal of the series circuit adjacent to the auxiliary capacitor; and

at least one driver circuit interconnected the main switch and the auxiliary capacitor for sensing voltage at a joining node of the main switch and the auxiliary capacitor, generating a driver signal, and sending the same to the switches at the primary and the secondary sides for switching them respectively,

wherein when the switch at the secondary side is turned into a closed condition, the switch at the primary side is switched to a closed condition enabling the switch at the primary side to store the electric energy of the primary winding to the auxiliary capacitor; when the switch at the secondary side is turned from the closed condition into an opened condition, the closed condition of the switch at the primary side is maintained for a predetermined period of time enabling the auxiliary capacitor to charge the primary winding until the electric energy being charged into the transformer is sufficient to cause the main switch to perform a zero voltage switch.

2. The flyback converter of claim 1, further comprising a diode in parallel connected with the main switch.

3. The flyback converter of claim 2, further comprising an input voltage filter capacitor having a positive terminal coupled to one terminal of the primary

winding and a negative terminal coupled to the main switch, wherein the positive and the negative terminals of the input voltage filter capacitor are coupled to the positive and negative terminals of an input voltage.

4. The flyback converter of claim 3, wherein one terminal of the switch at the primary side is coupled to a positive terminal of the input voltage filter capacitor and the other terminal thereof is coupled to the auxiliary capacitor.

5. The flyback converter of claim 4, wherein a positive terminal of the diode is coupled to a negative terminal of the input voltage filter capacitor and a negative terminal thereof is coupled to the auxiliary capacitor.

6. The flyback converter of claim 5, wherein the main switch is a metal-oxide-semiconductor field-effect transistor (MOSFET).

7. The flyback converter of claim 5, wherein the switch at the primary side is a metal-oxide-semiconductor field-effect transistor (MOSFET).

8. The flyback converter of claim 1, further comprising an output voltage filter capacitor having a negative terminal coupled to one terminal of the secondary winding and a positive terminal coupled to the switch at the secondary side wherein the positive and the negative terminals of the output voltage filter capacitor are coupled to the positive and negative terminals of an output voltage.

9. The flyback converter of claim 8, wherein the switch at the secondary side is a diode.